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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,864	10/11/2004	Fang-An Shu	14150-US-PA	5863

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JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER

NGUYEN, THANH T

ART UNIT PAPER NUMBER

2813

DATE MAILED: 03/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/711,864

Applicant(s)

SHU, FANG-AN

Examiner

Thanh T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 12/16/05 have been fully considered but they are not persuasive.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-11, 13-14 are stand rejected under 35 U.S.C. 102(b) as being anticipated by Nakashima et al. (U.S. Patent No. 2003/0160921), previously applied.

Referring to figures 1a-9, Nakashima et al. teaches claim 1. A method for fabricating poly-crystal indium tin oxide (ITO) film, the method comprising:
forming an amorphous ITO film (9, see paragraph# 48) on a substrate, and
performing one rapid thermal annealing (RTA) process (heating at the temperature greater 180°C), to transform the amorphous ITO film into a poly-crystal ITO film (see paragraph# 48).

Regarding to claim 2. wherein the step of forming the amorphous ITO film includes sputtering, physical vapor deposition, or chemical vapor deposition (see paragraph# 48).

Regarding to claim 3. wherein a thickness of the amorphous ITO film is 400 - 1500 angstroms (80 nm= 800 angstrom, see paragraph# 48).

Regarding to claim 5. wherein the substrate includes glass substrate, silicon substrate, or plastic substrate (see paragraph# 35).

Regarding to claim 6. wherein substrate includes rigid substrate or flexible substrate (see paragraph# 35, noted that the glass substrate is rigid substrate).

Regarding to claim 7. A method for fabricating poly-crystal indium tin oxide (ITO) electrode, suitable for use to form electrodes in a thin film transistor array, a color filter, a light emitting diode, or an organic electro-luminescence display, the method comprising:
forming an amorphous ITO film (9, see paragraph# 48) on a substrate,
patterning the amorphous ITO film (9, see figure 1F, paragraph# 49), to form a plurality of amorphous ITO electrodes (see paragraph# 23) on the substrate, and
performing one rapid thermal annealing (RTA) process (heating at the temperature greater 180°C), to transform the amorphous ITO electrodes into a plurality of poly-crystal ITO electrodes (see paragraph# 23, 48).

Regarding to claim 8. wherein the step of forming the amorphous ITO film includes sputtering, physical vapor deposition, or chemical vapor deposition (see paragraph# 48).

Regarding to claim 9. wherein a thickness of the amorphous ITO electrode is 400 - 1500 angstroms (80 nm= 800 angstrom, see paragraph# 48).

Regarding to claim 10. wherein the step of patterning the amorphous ITO film includes:
forming a patterned photoresist layer on the amorphous ITO film (see paragraph# 49, figures 1F);

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removing a portion of the amorphous ITO film by using the photoresist layer as the pattern as a mask, so as to form the amorphous ITO electrodes on the substrate, and removing the photoresist layer (see paragraph# 49, figures 1F). It is inherent that pattern the layer by photolithography process once has to form the pattern photoresist layer and used as a mask to etch the underlying layer to form a desire pattern.

Regarding to claim 11 . wherein the portion of the amorphous ITO film is removed by oxalic acid (see paragraph# 49).

Regarding to claim 13. wherein the substrate includes glass substrate, silicon substrate, or plastic substrate (see paragraph# 35).

Regarding to Claim 14. wherein substrate includes rigid substrate or flexible substrate (see paragraph# 35, noted that the glass substrate is rigid substrate).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made. .

Claims 4, 12 are stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. (U.S. Patent Publication No. 2003/0160921) as applied to claims 1-3, 5-11, 13-14 above in view of Chua et al. (U.S. Patent Publication No. 2005/0158902), previously applied.

Nakashima et al. teaches claim 1. A method for fabricating poly-crystal indium tin oxide (ITO) film, the method comprising:
forming an amorphous ITO film (9, see paragraph# 48) on a substrate, and
performing one rapid thermal annealing (RTA) process (heating at the temperature greater 180°C), to transform the amorphous ITO film into a poly-crystal ITO film (see paragraph# 48).

However, Nakashima et al. does not teach the RTA process for ITO is operated under 400°C - 700°C for 0.5 - 6 minutes.

Chua et al. teaches RTA process for ITO is operated under 400°C - 700°C for 0.5 - 6 minutes (see paragraph# 59).

It would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made to optimize the temperature and the time range of forming a poly-crystal ITO film, since it has been held that where the general conditions of a claim are disclosed in the prior art (i.e.- poly-crystal ITO film), discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233 (CCPA 1955).

The specification contains no disclosure of either the critical nature of the claimed arrangement (i.e.- wherein RTA process for ITO is operated under 400°C - 700°C for 0.5 - 6 minutes) or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen limitations or upon another variable recited in a claim, the applicant must

show that the chosen limitations are critical. In re Woodruff, 919 F.2d 1575, 1578 (FED. Cir. 1990).

Therefore, it would have been obvious to person of ordinary skill in the requisite art at the time of the invention was made would form the poly-crystal ITO film with the specific temperature and time range in process of Nakashima et al. as taught by Chua et al. because the process would a stable ITO film in a short period of time.

Response to Arguments

Applicant's arguments filed 1/16/05 have been fully considered but they are not persuasive.

Applicant contends that Nakashima et al. do not teach single RTA process to obtain the poly-crystal ITO in high quality for reducing the fabrication time. In response to applicant, Nakashima et al. clearly teach single RTA process to obtain the poly-crystal ITO in high quality for reducing the fabrication time (paragraph# 48).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, can be reached on (571) 272-1702. The fax phone number for this Group is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 (See **MPEP 203.08**).

A handwritten signature in black ink, appearing to read 'Thanh Nguyen', with a stylized, flowing script.

Thanh Nguyen
Patent Examiner
Patent Examining Group 2800

TTN